



# 2014 IAJC/ISAM Conference Program

Global Engineering:  
Leading the way into the 21st Century



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International Conference on  
Engineering & Technology  
September 25-27, 2014  
Orlando, Florida

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## IAJC/ISAM Conference Registration Desk Hours

**Thursday 3:00pm—7:00pm**

**Friday 8:30am—11:30am / 1:00pm—6:00pm**

**Saturday 8:00am—10:00am**

**The Embassy Suites hotel offers FREE breakfast (buffet), FREE Internet, FREE parking, and FREE daily receptions with open bar and snacks. Shuttle service is available to area shopping and all Central Florida**

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## *A Message from the IAJC and ISAM Presidents*



Dear Conference Participants:

As IAJC President and ISAM President, we would like to welcome you to the 4<sup>th</sup> IAJC/ISAM Joint International Conference on engineering and related technologies. The conference theme, *Global Engineering: Leading the Way into the 21st Century*, reflects the reality of the need for academic global connections and partnerships. Such partnerships can provide the backbone for strategic plans for creating a better future for the next generation of students, faculty, and researchers so that they, in turn, can lead the world in the tight, competitive global markets of the 21st century.

The IAJC and ISAM Conference Executive and Advisory Boards, made up of well-known individuals from over 50 of the top universities from around the globe, have made every effort to present this high-quality joint conference and make sure that your time is well spent and productive. Please make sure to contact any board member if you have questions or need assistance. Finally, the fame city of Orlando offers an excellent conference venue. Not only does it have a rich and varied history, but it is also the top vacation destination in the world with many fun activities for all ages.

Best wishes for a pleasant stay in Orlando and a productive and successful conference.

Sincerely,

Mark Rajai, Ph.D.  
IAJC President  
California State University-Northridge  
Phone: 818-677-5003  
Email: [mark.rajai@csun.edu](mailto:mark.rajai@csun.edu)

Alok Verma, Ph.D.  
ISAM President  
Old Dominion University  
Phone: 757-683-3766  
Email: [averma@odu.edu](mailto:averma@odu.edu)

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## ***Message from the IAJC/ISAM Conference General Chair***



As we in higher education and industry reflect back on the first decade in this new millennium, we realize that the sharing of ideas and resources is the best way for us to create a better future for the next generation of students, faculty, and researchers. In the competitive and tight global markets of the 21st century, leading companies across industry have embarked on massive reorganizations, mergers, partnerships, and all sorts of collaborative projects with their like-minded peers and rivals in order to not only survive but grow and thrive. But, as industry changes with time, so must academia. Conversely, as academic R&D efforts provide advancements in technology, so must industry provide a quick turnaround from concept to market. However, many academic organizations, journals, and conferences have been slow to adapt and provide the necessary platforms for the dissemination of knowledge.

Beginning in 2004, the editorial board of the International Association of Journals and Conferences (IAJC) embarked on groundbreaking and unprecedented efforts to establish strategic partnerships with other major rival journals and organizations to share resources and offer authors a unique opportunity to come to one conference and publish their papers in a broad selection of journals representing interests as diverse as those of the researchers and educators in fields related to engineering, engineering technology, industrial technology, mathematics, science, and teaching. These efforts resulted in an innovative model of joint international conferences that includes a variety of organizations and journals.

IAJC joint and independent international conferences have been a great success with the main conferences being held in the United States and regional, simultaneous conferences in other parts of the world. In addition to bringing people together at its conference venues, IAJC attracts myriad journals that wish to publish the best of what its attendees have to offer, thereby creating excitement in academic communities around the world. IAJC is a first-of-its-kind, pioneering organization. It is

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a prestigious global, multilayered umbrella consortium of academic journals, conferences, organizations, and individuals committed to advancing excellence in all aspects of technology-related education.

### **Conference Statistics:**

Of the submissions for this conference, there were 466 abstracts from 132 educational institutions and companies from around the world (multiple submissions from the same authors were not counted). The submissions came from 48 of the 50 U.S. states and 49 countries. After a multi-level review process, only 82 full papers and 19 abstracts were accepted for presentation at the conference and publication in the conference proceedings. This reflects an acceptance rate of about 22%, which is one of the lowest acceptance rates of any international conference.

Organizing such broad conferences is a monumental task and could not be accomplished with the help and support of the conference committee, the division/session chairs, and the reviewers. Thus, I offer my sincerest thanks to all for their hard work and dedication in the development of the outstanding 2014 conference program. I personally hope you will seek them out to thank them for their fine work.

As we continue to offer, and to strive to improve upon, these high-quality and unique conferences, we are seeking dedicated individuals to join us on the planning committee for the next conference—scheduled for fall, 2016. Please watch for updates on our website ([www.IAJC.org](http://www.IAJC.org)) and contact us anytime with comments, concerns, or suggestions. On behalf of the 2014 IAJC/ISAM conference committee and IAJC Board of Directors, we thank you for participating in this great conference and hope to see you at our next conference.

Sincerely,

*Philip D. Weinsier*

*IAJC/ISAM Conference General Chair*

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## *Conference Executive Board Members*

### **Conference General Chair**

#### ***Philip Weinsier***

Bowling Green State University-Firelands

Phone: (419) 433-5560 x 20628

Email: [philipw@bgsu.edu](mailto:philipw@bgsu.edu)

### **IAJC President and Conference Co-Chair**

#### ***Mark Rajai***

California State University-Northridge

Phone: (818) 677-5003

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### **ISAM President and Conference Co-Chair**

#### ***Alok K. Verma***

Old Dominion University

Phone: (757) 683-3766

Email: [averma@odu.edu](mailto:averma@odu.edu)

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Embry-Riddle Aeronautical University

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Penn State University

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**Marilyn Dyrud**

Oregon Institute of Technology

**Samson Lee**

Central Michigan University

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### Organization Sponsors

- International Association of Journals & Conferences (IAJC)
- International Society of Agile Manufacturing (ISAM)
- The Institute of Electrical and Electronics Engineers (IEEE)
- American Society for Engineering Education (ASEE)
- Lean Institute

### Journal Sponsors

- International Journal of Modern Engineering  
(official and flagship journal of IAJC)
- International Journal of Engineering Research and Innovation  
(official journal of IAJC)
- Technology Interface International Journal  
(official journal of IAJC)
- International Journal of Agile Manufacturing  
(official journal of ISAM)
- Journal of Industry and Higher Education
- International Journal of Entrepreneurship and Innovation
- Journal of STEM Education, Innovations and Research
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Applied Sciences & Technologies
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- La Salle University
- Amirkabir University of Technology

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## Main Conference Sponsors



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# Workshops

## **Workshop #1: Understanding and Teaching Statistical Process Control. A Hands-on Approach to Preparing Your Students for High-Tech Manufacturing**

**Friday, September 26, 1:00 - 4:00pm**

**Cypress #4 — FREE**

Preregistration is requested to help gauge attendance.

This workshop will answer the questions: "What is Statistical Process Control (SPC)?" and "Why is it important to preparing high tech manufacturing technologists for high tech manufacturing?" We will discuss the basics of Statistical Process Control and cover the following topics using a hands on, measurement approach:

- Process Variation – Why is it important

- Statistical Tools necessary to employ and understand:

  - SPC

  - Mean, Median, Mode

  - Standard Deviation, Cp, Cpk

  - Control Charts

  - Interpreting Control Charts

  - The influence of a measurement system on data

Attendees will be given access to all workshop materials, presentations, reading materials, Excel templates and will also receive written materials at the workshop.

The Southwest Center for Microsystems Education will also provide links to all of its other downloadable educational materials as well, including, but not limited to, videos, lectures, access to online distance learning short course(s) which will have all the materials available. This workshop is made possible through a grant from the National Science Foundation, Dept. of Undergraduate Education Advance Technological Education program, DUE #1205138.

*Presented by Dr. Matthias W. Pleil, Southwest Center for Microsystems Education at the University of New Mexico (mpleil@unm.edu; 505-272-7157)*

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## Workshop #2: An Interactive Presentation on the 10 Principles: A New Paradigm for Collaboration and Innovation

Saturday, September 27, 8:30 - 9:30am  
Cypress #4 — FREE



What can a bohemian subculture teach us about innovation in traditional organizations? In this session, we will explore the 10 Principles of Burning Man as a philosophical framework for capturing the spirit of innovation. By combining the social and professional elements of collaborative work and actively embracing diversity, these principles reveal a new paradigm for innovation that lifts professional boundaries, enhances creative potential, and unleashes greater possibilities. These principles are relevant to practitioners because they embrace the essence of Deming's 14 points while capturing the spirit of radical, socially responsible innovation. The final half-hour of this session will feature an interactive exercise based on one of the 10 Principles to help you identify the unique gifts you can bring to your organization and your community.

*Presented by Dr. Nicole Radziwill ([radziwnm@jmu.edu](mailto:radziwnm@jmu.edu)), James Madison University, and Dr. Morgan Benton ([bentonmc@jmu.edu](mailto:bentonmc@jmu.edu)), James Madison University*

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## Meals, Breaks, Receptions

*Note: Friday lunch is not included in “Full Conference” registrations. However, IAJC attendees will receive a 20% discount at the hotel restaurant.*

### Thursday, September 25

- 5:30 — 7:00pm  
Daily reception with open bar and snacks for Embassy Suites guests

### Friday, September 26

- 8:00 — 9:30am  
Full breakfast for Embassy Suites guests
- 11:30 — 1:00  
Executive Board Lunch
- 2:45 — 3:00  
Refreshment break
- 5:30 — 7:00pm  
Daily reception with open bar and snacks for Embassy Suites guests
- 7:00 — 8:30pm  
Dinner banquet and awards ceremony for all conference attendees

### Saturday, September 27

- 7:30 — 8:30am  
Full breakfast for Embassy Suites guests
- 10:30 — 10:45  
Refreshment break

## Session Legend

**ENG** Engineering

**EDU** Higher Education

**MFG** Manufacturing

**ITC** Information Technology, Business, Entrepreneurship, and Computer Science

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# Daily Schedule — Friday

Friday, September 26, 2014

9:30am—11:30am Magnolia A

## EDU 301: Topics in STEM Education

**Session Chair: Mekonnen Tesfu**

(Hamburg University of Technology—GERMANY)

### **INVITED SPEAKER #134**

**What Makes The Difference for Under-represented Students Staying in STEM Majors**

*Rosalyn Hobson, Virginia Commonwealth University*

### **Paper #012**

**The Academic Impact of Majoring in Technology for First-Generation College Students**

*Shirl Donaldson, Purdue University; Ryan Favors, Purdue University*

### **Paper #068**

**The Relationship of Active Learning-based Courses and Student Motivation for Pursuing STEM Classes**

*Mohammadjafar Esmaeili, Eastern Michigan University; Ali Eydgahi, Eastern Michigan University*

### **Paper #122**

**Integrating Engineering Design Process in K-12 Curriculum in Virginia with Project-based Learning**

*Alok Verma, Old Dominion University; Greg Selby, Old Dominion University; Nina Brown, Old Dominion University; Vukica Jovanovic, Old Dominion University; Nathan Luetke, Old Dominion University*

### **Abstract #141**

**Using Competition to Bring Students to STEM**

*Alka Harriger, Purdue University; Brad Harriger, Purdue University; Ron Baysinger, Phoenix Contact; Arnold Offner, Phoenix Contact; Patty Marrero, Phoenix Contact*

9:30am—11:30am Cypress 1

## MFG 101: Topics in Manufacturing I

**Session Chair: Mandar Khanal**

(Boise State University)

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# Daily Schedule — Friday

## **Paper #039**

### **Improving the Roller Shaft Subassembly Process using Discrete-event Modeling and Simulation: A Case Study**

*Ali Alavizadeh, Indiana University Purdue University–Fort Wayne; Robert Palevich, Indiana University Purdue University–Fort Wayne*

## **Paper #070**

### **Influence of Some Process Parameters on Build Time, Material Consumption, and Surface Roughness of FDM Processed Parts: Inferences Based on Taguchi Design of Experiments**

*Fahraz Ali, University of the West Indies (TRINIDAD and TOBAGO); Boppana Chowdary, University of the West Indies (TRINIDAD and TOBAGO); Justin Maharaj, Caribbean Industrial Research Institute, University of the West Indies (TRINIDAD and TOBAGO)*

## **Paper #073**

### **A Multi-agent-based Approach to Dynamic Scheduling of Machines and Automated Guided Vehicles (AGV) in Manufacturing Systems by Considering AGV Breakdowns**

*Vahit Kaplanoğlu, University of Gaziantep (TURKEY); Cenk Şahin, Cukurova University (TURKEY); Adil Baykasoğlu, Dokuz Eylul University (TURKEY); Rızvan Erol, Cukurova University (TURKEY); Alper Ekinci, University of Gaziantep (TURKEY); Melek Demirtaş, Cukurova University (TURKEY)*

## **Abstract #103**

### **A Methodology for Optimal Tuning of PID Controllers Subject to Process Constraints**

*Constantine Tzouanas, Clear Lake High School; Vassilios Tzouanas, University of Houston-Downtown*

## **Paper #121**

### **Stochastic Modeling and Validation of Three-tier Supply Chains using Multiple Tools**

*Alok Verma, Old Dominion University*

## **9:30am—11:30am Cypress 2**

### **ENG 201: Topics in Construction—Concrete and Flexible Pavements**

**Session Chair: Emily Crawford**  
(Southern Wesleyan University)

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# Daily Schedule — Friday

## **INVITED SPEAKER #124**

### **Bond Strength of PCC Pavement Repairs Using Metakaolin-based Geopolymer Concrete**

*Hani Alazani, North Dakota State University; Mijia Yang, North Dakota State University*

## **Paper #018**

### **Evaluation of Initial IRI Values as Acceptance Criteria for Flexible Pavements**

*Don Chen, University of North Carolina-Charlotte; Michael Dye, University of North Carolina-Charlotte*

## **Paper #020**

### **Evolution of Reinforced Concrete Thin Shells: The Impact on Architectural and Building Structures (1920-1970)**

*Christian Hyeng, North Carolina A&T State University; S.N. Krivoschapko, Peoples' Friendship University of Russia (RUSSIA)*

## **Paper #031**

### **Construction of a Full-scale Recycled Brick Masonry Aggregate Concrete Test Pavement**

*Tara Cavalline, UNC Charlotte; Dallas Schwerin, UNC Charlotte; David Weggel, UNC Charlotte; Chuck McClure, Parkway Concrete*

## **Paper #033**

### **Compressive Performance of Recycled Aggregate Mortar**

*Thomas Nicholas, UNC Charlotte; Paul Radford, UNC Charlotte; Tara Cavalline, UNC Charlotte; Anthony Brizendine, UNC Charlotte*

## **9:30am—11:30am Cypress 3**

### **ENG 202: Topics in Alternative Energy, MEMS, and Hybrid Energy Storage**

**Session Chair: John Kugler**  
(Chicago Teachers Union)

## **Paper #014**

### **A Review of the Commercial Trainers and Experiment Kits for Teaching Renewable Energy Manufacturing**

*Wangping Sun, Oregon Institute of Technology; Bradley Kramer, Kansas State University; Zhichao Li, North Carolina A&T University; Joe Stuart, Oregon Institute of Technology*

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# Daily Schedule — Friday

## **Paper #019**

### **Evaluation of the Silicon on Glass Micro-fabrication Process for MEMS Accelerometers**

*Thomas White, Central Michigan University; Kevin Petsch, Central Michigan University; Tolga Kaya, Central Michigan University*

## **Paper #056**

### **Plug and Play Microsystems (MEMS) Technology Into Your Engineering and Technology Program**

*Matthias Pleil, University of New Mexico*

## **Paper #089**

### **Vertical Axis Wind Turbine Performance Prediction High and Low Fidelity Analysis**

*Franklyn Kanyako, Masdar Institute of Science and Technology (UAE); Isam Janajreh, Masdar Institute of Science and Technology (UAE)*

## **Abstract #106**

### **Modeling and Simulation of Hybrid Energy Storage Systems**

*Biswajit Ray, Bloomsburg University of Pennsylvania*

## **9:30am—11:30am Cypress 4**

### **ITC 401: Topics in Medical Computing**

#### **Session Chair: Mahmoud Al-Odeh**

*(Bemidji State University)*

## **Paper #062**

### **Scratch for Arduino: Exergaming Development**

*Alka Harriger, Purdue University; Mayari Serrano, Purdue University*

## **Paper #065**

### **Using Flowchart Programming to Create Exergames**

*Mayari Serrano, Purdue University; Alka Harriger, Purdue University*

## **Paper #076**

### **A Prototype Distributed Framework for Identification and Alerting for Medical Events in Home Care**

*Gary Holness, Delaware State University; Leon Hunter, Delaware State University*

## **Paper #078**

### **Wearable Ambulatory 2-Channel EEG Neuro-monitor Platform for Real-life Engagement Monitoring Based on Brain Activities at the Prefrontal Cortex**

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# Daily Schedule — Friday

*Sergi Consul-Pacareu, University of Memphis; Ruhi Mahajan, University of Memphis; Md Nazmus Sahadat, University of Memphis; Bashir Morshed, University of Memphis*

## **Abstract #143**

### **Applied Engineering Models Suggesting Strategies to Reduce Causalities During a School Active Shooter Event**

*Eric Dietz, Purdue University; Adam Kirby, Purdue University; Charles Anklam, Purdue University; Filipo Sharevski, Purdue University*

## **1:00pm—2:45pm Magnolia A**

### **EDU 302: Topics in Education—Capstone Projects and e-learning**

**Session Chair: Alex Johnson**  
(University of North Dakota)

## **Paper #003**

### **Use of Mobile Application Development Technologies in Capstone Projects**

*Shuju Wu, Central Connecticut State University; Xiaobing Hou, Central Connecticut State University; Karen Tracey, Central Connecticut State University*

## **Paper #037**

### **Open Source, Multilevel, Interactive Programmable Logic Controller Software Development for High School Students, Two- and Four-year Colleges, and Displaced Workers**

*Aleksandr Sergeyev, Michigan Technological University; Scott Kuhl, Michigan Technological University; Kurt Kalenauskas, Michigan Technological University; Bochao Li, Michigan Technological University*

## **Paper #048**

### **Capstone Project: PLC Control System with Integrated PID Controller for Control System Optimization**

*Abdullah Atwah, Michigan Technological University; Ian Bumgardner, Michigan Technological University; Mohammed Bushlaibi, Michigan Technological University; Steven Castello, Michigan Technological University; Joshua Erickson, Michigan Technological University; Aleksandr Sergeyev, Michigan Technological University; Mohsen Azizi, Michigan Technological University*

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# Daily Schedule — Friday

## **Paper #052**

### **Modifying the Curriculum of an Engineering Technology Program to meet the Needs of Local Manufacturing Consortium**

*Mauricio Torres, Northern Kentucky University;  
Morteza Sadat-Hossieny, Northern Kentucky University*

## **Paper #057**

### **Use of Remote Laboratories for Education in Industrial Processes and Automation**

*Jose Avila, Military University Nueva Granada (COLOMBIA); Dario Amaya, Military University Nueva Granada (COLOMBIA)*

## **1:00pm—2:45pm Cypress 1**

### **ENG 203: Topics in Engineering I**

**Session Chair: Sadeta Krijestorac**  
(Daytona State College)

## **Paper #015**

### **Rotational Machine Fault Detection with Ensemble Empirical Mode Decomposition Based on a Three Orthogonal Channel Sensor**

*Li Tan, Purdue University-North Central; Alexander Mussa, Purdue University-North Central; Justin Poling, Purdue University-North Central; Kai Justice, Purdue University-North Central; Hongbo Xu, Nanjing University of Science and Technology (CHINA)*

## **Paper #045**

### **Effects of Sound Wave Transmission Pathways on Acceptable Noise Levels**

*Bankole Fasanya, North Carolina A&T State University*

## **Paper #086**

### **Gasification of Two Untapped Resources: El-Lajjun Oil Shale and Municipal Solid Waste**

*Idowu Adeyemi, Masdar Institute of Science and Technology (UAE); Isam Janajreh, Masdar Institute of Science and Technology (UAE)*

## **Abstract #104**

### **Optimizing Performance of a Speech Analysis System for Orofacial Muscle Activity Data**

*Shonda Bernadin, Florida A&M University-Florida State University; Tejal Udhan, Florida State University; Megan MacPherson, Florida State University*

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# Daily Schedule — Friday

## **Paper #144**

### **Numerical Simulation of Direct Contact Membrane Desalination (DCMD)**

*Isam Janajreh, Masdar Institute of Science and Technology (UAE); Dana Suwwan, Masdar Institute of Science and Technology (UAE)*

**1:00pm—2:45pm Cypress 2**

### **ENG 204: Topics in Electronics—DAQ, Hallbach Arrays, and Artificial Neural Systems**

**Session Chair: Ben Zoghi** (Texas A&M University)

## **Paper #042**

### **HDL-based Implementation of a Novel Dynamic Reconfigurable Data Acquisition Scheduler-on-Chip (SchoC)**

*Mohammed Abdallah, State University of New York*

## **Paper #088**

### **Design and Test of an Ironless Axial Flux Permanent Magnet Machine using a Hallbach Array**

*Todd Batzel, Penn State University-Altoona College; Andrew Skraba, Penn State University-Altoona College; Ray Massi, Penn State University-Altoona College*

## **Paper #090**

### **Optimal Placement of Phasor Measurement Units for Maximum Network Observability Using Python-Gurobi**

*Anil Khanal, North Carolina A&T State University; Emmanuel Oleka, North Carolina A&T State University; Ali Osareh, North Carolina A&T State University; Gary Lebby, North Carolina A&T State University*

## **Paper #091**

### **Evolving Artificial Neural Systems for Short-term Power System Load Forecasting**

*Camille Koch, North Carolina A&T State University; Joshua Murphy, North Carolina A&T State University; Charles Winley, North Carolina A&T State University; Gary Lebby, North Carolina A&T State University; Ali Osareh, North Carolina A&T State University*

## **Abstract #101**

### **Development of a Hybrid Current Controller for Electric Motor Drives**

*Shiyoung Lee, Penn State University-Berks*

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# Daily Schedule — Friday

## 1:00pm—2:45pm Cypress 3

### **ITC 402: Topics in Information Technology— Security and Risk Management**

**Session Chairs:** Faruk Yildiz (Sam Houston State University); Marla Rogers (nTelos Wireless)

#### **INVITED SPEAKER #132**

##### **Big Data—Theoretic Advancements for Probabilistic Risk Assessment**

*Zahra Mohaghegh, University of Illinois at Urbana-Champaign*

#### **Paper #008**

##### **A Comprehensive and Open Framework for Classifying Incidents Involving Cyber-Physical Systems**

*William Miller, Brigham Young University; Dale Rowe, Brigham Young University; Richard Helps, Brigham Young University; Ross Woodside, Brigham Young University*

#### **Paper #043**

##### **Leveraging Next-Generation Virtualization Technologies for Advanced Malware Analysis in the Classroom**

*Dale Rowe, Brigham Young University; Laura Wilkinson, Brigham Young University*

#### **Paper #081**

##### **Risk Management Framework in Cloud Computing Security in Business and Organization**

*Ibraheem Kateeb, North Carolina A&T State University; Madallah Almadallah, North Carolina A&T State University*

#### **Paper #087**

##### **Information Security Risks Awareness Based on Categories**

*Syed Raza, Trenholm State Technical College*

## 1:00pm—4:00pm Cypress 4

### **Workshop #1: Understanding and Teaching Statistical Process Control. A Hands-on Approach to Preparing Your Students for High-tech Manufacturing**

(FREE—Preregistration is requested to help gauge attendance)

*Matthias Pleil, Southwest Center for Microsystems Education at the University of New Mexico*

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# Daily Schedule — Friday

**2:45pm—3:00pm**

**Refreshment Break**

**3:00pm—4:45pm Magnolia A**

**EDU 303: Topics in Education I**

**Session Chair: Bashir Morshed**

(University of Memphis)

**Paper #007**

**Using Strategic Partnerships to Deliver Reality-based Education**

*Sudershan Jetley, Bowling Green State University;  
Anthony Palumbo, Bowling Green State University*

**Paper #028**

**Value Steam Mapping: Recreating an Industrial Environment in an Educational Setting**

*Mahmoud Al-Odeh, Bemidji State University; Alister McLeod, Indiana State University; M. Affan Badar, Indiana State University*

**Paper #038**

**Industry-driven Power Engineering Curriculum Development in an Electrical Engineering Technology Program**

*Aleksandr Sergeyev, Michigan Technological University; Nasser Alaraje, Michigan Technological University*

**Paper #055**

**Parking and Street Lighting with Solar and Wind Energy Powered Retrofitted LED Lights**

*Faruk Yildiz, Sam Houston State University*

**Paper #072**

**Managing Course Enrollment Exceptions using Web-Based Forms**

*Sam Khoury, Athens State University; Donald Staub, Işık University (TURKEY); Mike Haghighi, Athens State University; Stacie Hughes, Athens State University*

**3:00pm—4:45pm Cypress 1**

**MFG 102: Topics in Manufacturing II**

**Session Chair: Li Tan**

(Purdue University North Central)

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# Daily Schedule — Friday

## **INVITED SPEAKER #128**

### **Validation and Visualization of Objects used for the production of Direct Digital Manufacturing Components or 3D Printed Models**

*Rafael Obregon, Western Illinois University*

## **Paper #001**

### **3D Design Process for Manufacturing and Assembly: Table Top Tools for Incremental Continuous Improvement (Kaizen)**

*Isam Badawi, University of Hail (SAUDIA ARABIA);  
Magesh Chandramouli, Purdue University Calumet*

## **Paper #004**

### **Applications of Digital Manufacturing in Manufacturing Process Support**

*Vukica Jovanovic, Old Dominion University; Mihael Debevec, University of Ljubljana (SLOVENIA); Niko Herakovic, University of Ljubljana (SLOVENIA); Alok Verma, Old Dominion University; Mileta Tomovic, Old Dominion University*

## **Paper #066**

### **Technology Driven Innovation — Strengthening Industry and Academia Partnerships for Advanced Manufacturing Gains**

*Alton Kornegay, North Carolina A&T State University; Bankole Fasanya, North Carolina A&T State University; Dominick Fazarro, University of Texas-Tyler; James Wright, University of Texas at Dallas; Gerald Watson, North Carolina A&T State University; Evelyn Sowells, North Carolina A&T State University*

## **Paper #082**

### **Autonomation—Future of Manufacturing**

*Kwabena Boakye-Adjei, Central Connecticut State University; Ravindra Thamma, Central Connecticut State University; Daniel Kirby, Central Connecticut State University*

## **3:00pm—4:45pm Cypress 2**

### **ENG 205: Topics in Construction—Human Behavior and Traffic Forecasting**

**Session Chair: Youakim Kalaani**  
(Georgia Southern University)

## **INVITED SPEAKER #125**

### **Human Behavior and Low Energy Architecture: Linking Environmental Adaptation, Personal Comfort, and Energy Use in the Built Environment**

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# Daily Schedule — Friday

*Jin Wen, Drexel University; Jared Langevin, Drexel University*

## **Paper #006**

### **Critical Thinking and Technical Decisions**

*Barry Hoy, Saint Leo University*

## **Paper #029**

### **Integrating Ethics by Using Cases**

*Marilyn Dyrud, Oregon Institute of Technology*

## **Paper #035**

### **Development of a Web-based 3D Visualization and Cluster Computing System for Disaster Management**

*Ge Jin, Purdue University Calumet; Barbara Nicolai, Purdue University Calumet; Chuck Winer, Purdue University Calumet; Gerald Dekker, Purdue University Calumet; John Moreland, Purdue University Calumet*

## **Paper #058**

### **State-space Models with Kalman Filtering for Freeway Traffic Forecasting**

*Brian Portugais, Boise State University; Mandar Khanal, Boise State University*

## **3:00pm—4:45pm Cypress 3**

### **ENG 206: Topics in Alternative Energy and Sustainability**

#### **Session Chair: Dale Rowe**

*(Brigham Young University)*

## **Paper #010**

### **Automation of Biodiesel Reactor for the Production of Biodiesel from WVO Using a PLC and Small-scale Continuous Ultrasonic Processor**

*Chase Malone, Tennessee Technological University; Matthew Holman, Tennessee Technological University; Brian Katz, Tennessee Technological University; Ahmed Elsayy, Tennessee Technological University*

## **Paper #067**

### **Analysis of Wind-Power Generation with Wind-guide Attachment**

*Ulan Dakeev, University of Michigan-Flint; Connie Lam, University of Michigan-Flint; James Pung, University of Michigan-Flint*

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# Daily Schedule — Friday & Saturday

## **Paper #084**

### **Numerical Simulation of Transesterification and Sensitivity Study**

*Isam Janajreh, Masdar Institute of Science and Technology (UAE); Mohamed Almusharrek, Masdar Institute of Science and Technology (UAE)*

## **Paper #085**

### **Effect of Process Parameters on Basification: Review**

*Isam Janajreh, Masdar Institute of Science and Technology (UAE); Idowu Adeyemi, Masdar Institute of Science and Technology (UAE)*

## **Abstract #142**

### **A Multi-Agent Based Framework for a Closed Loop Supply Chain Material Flow and Transportation Planning System**

*Yusuf Kuvvetli, Çukurova University (TURKEY); Cenk Şahin, Çukurova University (TURKEY); Rizvan Erol, Çukurova University (TURKEY); Adil Baykasoğlu, Dokuz Eylül University (TURKEY); Vahit Kaplanoğlu, Gaziantep University*

## Saturday, September 27, 2014

**8:30am—10:30am Cypress 1**

### **ENG 207: Topics in Engineering II**

**Session Chair: Vassilios Tzouanas**  
(University of Houston-Downtown)

## **INVITED SPEAKER #123**

### **Multilayer Composite Insulation for Advanced Onboard Performance Monitoring System of Spacecraft Structures in Extreme Temperature Environments**

*Ying Huang, North Dakota State University*

## **Paper #013**

### **A Door Motion Energy Harvesting System for Powering an Electronic Door Lock**

*Dale Litwhiler, Penn State Berks; Thomas Gavigan, Penn State Berks*

## **Paper #051**

### **Automating a Heat Shrink Tubing Process**

*Shahrokh Yousefi-Darani, University of North Texas; Nihal Joshua, University of North Texas; Huseyin Bostanci, University of North Texas; Enrique Barbieri, University of North Texas*

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# Daily Schedule — Saturday

## **Paper #059**

### **A Study on Computational of Flow Modeling**

*Sabah Tamimi, Al Ghurair University (UAE)*

## **Paper #083**

### **LabView-based Navigational Aids to Predict the Position of Automated Guided Vehicles with Ultrasound and Radio Frequency Sensing**

*Ravindra Thamma, Central Connecticut State University; Gregory Marshall, Charter Oak State College; Hugo Garcia, University of Leon (SPAIN); Mark Rajai, California State University-Northridge*

## **8:30am—10:30am Cypress 2**

### **ITC 403: Topics in Information Technology—FEA Software and Desktop VR Frameworks**

#### **Session Chair: Ali Eydgahi**

*(Eastern Michigan University)*

## **INVITED SPEAKER #130**

### **Regulatory Compliance Software Development: Inevitability, Methods, Hopes and Concerns**

*Peter Knoke, University of Alaska-Fairbanks*

## **Paper #036**

### **Development of Casual 2D Game Laboratory Exercises in Introductory Computer Graphics Programming Course**

*Ge Jin, Purdue University Calumet; Magesh Chandramouli, Purdue University Calumet*

## **Paper #050**

### **Geometry and Graphics for Developing a Multi-modal Multidimensional Desktop Virtual Reality framework**

*Magesh Chandramouli, Purdue University Calumet; Gary Bertoline, Purdue University; Isam Badawi, University of Hail (SAUDI ARABIA)*

## **Abstract #113**

### **Evaluation of Finite-Element Analysis Software Packages by Accuracy and Efficiency**

*Samson Lee, Central Michigan University*

## **Abstract #117**

### **Virtual Simulation on the Web**

*Samir Akhrouf, Adel Merabet, Djamel Boubetra, Larbi Selmani, Boubetra Abdelhak, Bordj Bou Arreridj University (ALGERIA)*

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# Daily Schedule — Saturday

## 8:30am—10:30am Cypress 3

### **ITC 404: Topics in Information Technology—Organizational Redesign and Project Management**

**Session Chair: Tara Cavalline**  
(University of North Carolina-Charlotte)

#### **Paper #046**

##### **A Case Study: Redesigning the Organizational Structure of a Project-Driven Company**

*Mohsen Hamidi, Utah Valley University; Tammy Parker, Utah Valley University; Kambiz Farahmand, North Dakota State University*

#### **Paper #061**

##### **PMO, Its Impact on Project Success, and Measuring Its Performance**

*Saurabh Godbole, Purdue University*

#### **Abstract #107**

##### **Bench-top and Industrial Metal Lathes: Different and Similar, but Needed in Technology Education**

*Alex Johnson, University of North Dakota; Dave Yearwood, University of North Dakota*

#### **Abstract #109**

##### **The Cost of Quality in Military Information Technology Products**

*Kevin Dittman, Purdue University; Robert Bott, Purdue University*

#### **Abstract #145**

##### **Organizational Impacts of Participation in Development of Industry-Level Technology Roadmaps**

*Austin Cheney, Eastern Illinois University; Kenneth Pence, Vanderbilt University; David Dilts, Dilts & Partners, LLC*

## 8:30am—10:30am Cypress 4

### **Workshop #2: An Interactive Presentation on the 10 Principles: A New Paradigm for Collaboration and Innovation** (FREE)

*Nicole Radziwill and Morgan Benton, James Madison University*

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# Daily Schedule — Saturday

**8:30am—10:30am Cypress 5**

## **EDU 304: Topics in Education II**

**Session Chair: Ben Zoghi**

(Texas A&M University)

### **INVITED SPEAKER #133**

#### **Interdisciplinary, Industry-University, and Flipped Classrooms in Engineering Education: A First-Hand Report**

*Lunal Khuon, Villanova University; Kevin Buckley, Villanova University; Karl Zurn, Villanova University/Florida Research Instruments; J. Brooks Zurn, Villanova University/Florida Research Instruments; Edward Char, Villanova University*

### **Paper #021**

#### **Validating the Use of Teaching Effectiveness Data in the Improvement of Teaching**

*Jess Godbey, Jacksonville State University; Terry Marbut, Jacksonville State University*

### **Paper #022**

#### **Underwater Remotely Operated Vehicle Manufacturing Assembly and Training using X3D/Virtual Reality Modeling Language**

*Magesh Chandramouli, Purdue University Calumet; Isam Badawi, University of Hail (SAUDI ARABIA); Michael Ziller, Purdue University Calumet; Mohamed El Ashmawy, Suez Canal University (EGYPT); Mohammad Zahraee, Purdue University Calumet*

### **Paper #034**

#### **Undergraduate Research Scholar: The First Step Towards a Hybrid Lecture-Based and Inquiry/Research-Based Undergraduate Engineering Program**

*Rami Haddad, Georgia Southern University; Youakim Kalaani, Georgia Southern University*

### **Paper #074**

#### **Music Touring Logistics Managers' Critical Skill Set Requirements**

*Kim LaFavor, Athens State University; Sam Khoury, Athens State University; Charles Roberts, Athens State University*

**10:30am—10:45am**

**Refreshment Break**

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# Daily Schedule — Saturday

## 10:45am—12:30pm Cypress 1

### **ITC 405: Topics in Information Technology— Business Intelligence and Decision Making**

**Session Chair: Mohammed Abdallah** (State University of New York Institute of Technology)

#### **INVITED SPEAKER #135**

#### **A Critical Thinking Aspect of Systems Thinking versus Analytical Thinking**

*Nicholas Twigg, Coastal Carolina University*

#### **Paper #026**

#### **The Future of Business Intelligence**

*Ibraheem Kateeb, North Carolina A&T State University; Shahbaz Humayun, North Carolina A&T State University; Dalal Bataweel, North Carolina A&T State University*

#### **Paper #069**

#### **The Evolution of Business Intelligence**

*Ibraheem Kateeb, North Carolina A&T State University; Dalal Bataweel, North Carolina A&T State University*

#### **Paper #071**

#### **Perceptions of Employers Towards Hiring Ex-Offenders with Online Degrees**

*Emily Crawford, Southern Wesleyan University*

#### **Abstract #119**

#### **Systematic Integration of Computer Simulation and Laboratory Tests for Cost Effective and Valid Experimentation**

*Mekonnen Tesfu, Cooperative State University of Baden-Württemberg (GERMANY)*

## 10:45am—12:30pm Cypress 2

### **ENG 208: Topics in Construction—Flooding and Evacuation Modeling**

**Session Chair: John Kugler**  
(Chicago Teachers Union)

#### **INVITED SPEAKER #129**

#### **Flooding Impacts on Communities**

*Roger Ruggles, Lafayette College*

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# Daily Schedule — Saturday

## **Paper #017**

### **Evacuation Database Module: Residence Inspection Process**

*Kimberly Spoa-Harty, Purdue University Calumet;  
Barbara Nicolai, Purdue University Calumet*

## **Paper #044**

### **Manufacturing Problem Solving in a Job Shop: Research in Layout Planning**

*Abdullah Sayed, Purdue University Calumet; Lash Mapa, Purdue University Calumet*

## **Paper #047**

### **The Impact of Project Delivery Methods used on Public Highway-Rail Intersection Projects in New York State**

*Osileke Osipitan, New York State Department of Transportation; Musibau Shofoluwe, North Carolina A&T State University*

## **Paper #053**

### **The Concept and Methodology for Development of Effective Human Reliability Data-Banks in Road Transportation**

*Khashayar Hojjati-Emami, University of Ottawa (CANADA); Balbir Dhillon, University of Ottawa (CANADA); Kouroush Jenab, La Salle University*

## **10:45am—12:30pm Cypress 3**

### **ITC 406: Topics in Medical Technology—Identity Theft and Drug Delivery Systems**

**Session Chair: Austin Cheney**  
(Eastern Illinois University)

## **INVITED SPEAKER #138**

### **Micro-flow Cytometry using Photonic Crystals**

*Justin Stewart, University of South Florida; Anna Pyayt, University of South Florida*

## **Paper #025**

### **Medical Data Breaches**

*Susan Fowler, Purdue University; Samuel Liles, Purdue University*

## **Paper #060**

### **Optimality Identification in Epidemiology using Neural Networks**

*Samir Talssi, Ben M'sik, Hassan II University (MOROCCO); Noura Yousfi, Ben M'sik, Hassan II University (MOROCCO)*

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# Daily Schedule — Saturday

## **Paper #077**

### **Stimuli-controlled Drug Delivery System Development with Implantable Biocompatible Chitosan Microbeads**

*Ankita Mohapatra, University of Memphis; Md Sahadat, University of Memphis; Bashir Morshed, University of Memphis; Gregory McGraw, University of Memphis; Alex Hoban, University of Memphis; Jessica Jennings, University of Memphis; Warren Haggard, University of Memphis; Joel Bumgardner, University of Memphis; Sanjay Mishra, University of Memphis*

## **Abstract #120**

### **An Automated Real-time Monitoring System for the Study of Seeds Biology**

*Saleh Sbenaty, Middle Tennessee State University; Thiruparan Balachandran, Proteus Digital Health Inc.; Jeffrey Walck, Middle Tennessee State University*

## **10:45am—12:30pm Cypress 4**

### **EDU 305: Topics in Education III**

**Session Chair: Mandar Khanal**  
(Boise State University)

## **INVITED SPEAKER #131**

### **An Innovative Approach to Professional Practice Using a Culminating Undergraduate Experience**

*David Foster, Kettering University*

## **Paper #009**

### **Ten Year Evolution of an Accredited, Multisite Bachelors in Biomedical Engineering Technology (BBET) Program**

*Chad Kennedy, DeVry University; William Phillips, DeVry University; Anup Majumder, DeVry University; Abour Cherif, DeVry University; Robert Aron, DeVry University*

## **Paper #032**

### **Engineering Management: University-Industry Partnerships Create Business-savvy Scientists**

*Saeed Foroudastan, Middle Tennessee State University; Dianna Prince, Middle Tennessee State University*

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# Daily Schedule — Saturday

## **Paper #049**

### **Addressing New Skills Needs for the Automotive Industry through a Motorsports Educational Pathway**

*Vukica Jovanovic, Mileta Tomovic, Old Dominion University; Alok Verma, Old Dominion University; Nathan Luetke, Old Dominion University; Steve Branch, Patrick Henry Community College*

## **Abstract #108**

### **The Metallurgical Challenge: A Meaningful Learning Activity**

*Alex Johnson, University of North Dakota; Dave Yearwood, University of North Dakota*

## **Abstract #115**

### **Trends in Undergraduate Enrollment in Engineering and Computer Science**

*Noureddine Bekhouche, Jacksonville State University*

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